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PRESENTATION BY LIBBEY-OWENS-FORD GLASS COMPANY

# Storm Sash Save Fuel for Industry

## RELEASE CARS FOR URGENT SHIPPING

*Storm sash may be secured to match a permanent window like the one shown here, or with large panes of glass. While appearance and the comfort of his family are always considered, the saving in fuel consumption is the practical reason why every property owner wants double glazing.*

- There is one thing which even the government wants Americans to hoard — coal.

That doesn't mean that every family head is being urged to double or triple the size of his bin. Lots of folks can't do that, and besides THERE'S ANOTHER WAY TO HOARD FUEL!

Storm sash and storm doors on all outside openings of a house save, on an average, one out of every four shovelsful of coal. Window conditioning, thus, is the *other* way to hoard fuel for it *makes coal last at least 25 per cent longer.*

Architects, to whom has been delegated the job of designing hundreds of thousands of dwellings for the families of workers in war industries, can help Americans make their fuel go further by specifying storm windows and doors for each house they plan. There never has been a time when it was so important to conserve the nation's fuel supply by equipping homes with extra glazing.

With industrial consumption of fuel increasing enormously and transportation facilities curtailed by urgent war supply shipments, designers are doing a patriotic duty in making houses as snug and draftless as possible by double glazing all outside openings.

### SAVING FUEL AIDS WAR EFFORT

A recent government information circular conservatively estimates that the average family uses five tons of coal, or equivalent fuel, a year. Saving 25 per cent of this annual consumption would make an appreciable contribution to the nation's industrial fuel pile, and release thousands of railroad and oil cars, and hundreds of barges and tankers for war service.

Architects can make a valuable contribution to these potential savings when planning houses for America's defense workers.

According to the W.P.B. ruling of February 24, all new houses in which critical materials are utilized must conform to a definite limitation of heat loss. The ruling limits the maximum heat escape to 66 BTU per square foot of floor area per hour, and a maximum output of 80,000 BTU for the heating plant of a house. These limitations on heat loss and output will result in the installation of smaller heating systems, and storm sash and doors provide a practicable method of meeting these requirements.

The number of housing units which will be built in the United States during 1942 is unknown, but it will probably be around 400,000. Using the average annual coal consumption of five tons per dwelling unit, it is a simple matter to figure that homes of war production workers would require 2,000,000 tons, or their equivalent in fuel oil.

### 500,000 TONS COAL SEEN AS SAVING

With these places fitted with extra sash and storm doors, the 25 per cent saving would amount to 500,000 tons. Since the majority of coal cars haul 50 tons, the foregoing saving would release 10,000 freight cars for transporting urgent orders. Translated into fuel oil, this saving is equivalent to 7,000 tank cars.

An average freight car will hold approximately 1,800 24"x48" storm sash, which means that a carload will window-condition 150 houses averaging twelve openings each.

### ARCHITECTS HAVE PLACE IN PICTURE

By specifying double glazing for defense housing units, architects can help save 50 tons of coal for every 40 homes. One carload of installed storm sash, then, will save nearly four cars of coal, or around three tank cars of fuel oil.

One of the best proofs of the value of double glazing and insulation was a test by the Tennessee Valley Authority which showed that a completely weather-protected house used 44.75 per cent less fuel per season than an identical uninsulated one.

The United States Department of Commerce estimates that the heat loss through windows and doors ranges between 20 and 35 per cent. Under present conditions, architects can cooperate for victory by taking every practicable step possible to conserve heat. In addition to the saving in fuel, a double glazed house saves much metal. A heating plant in a window conditioned dwelling can be smaller, and if a hot water, steam or vapor system is used, smaller or fewer radiators are necessary.

## FUEL CONSERVATION CHARTED

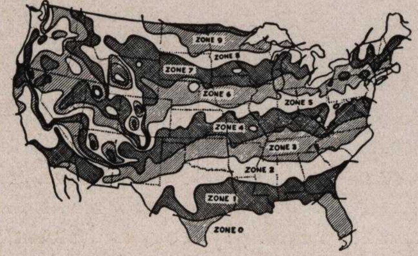
An accompanying table of figures shows fuel savings and comparative heating costs in four types of houses with and without storm sash and attic insulation. It is calculated that ten pounds of coal, or 1/200 of a ton, rated at 12,500 BTU per pound, contain the same number of heat units as a gallon of average quality fuel oil.

The growing architectural trend toward larger window areas in houses likewise calls for the specifying of double glazing. Regardless of the style of sash, it is possible nowadays to match it with storm windows so that none of the beauty of the permanent units is lost. As the dimensions of an opening increase, the advisability of fitting it with a second pane of glass grows in proportion.

Architects have long been aware of the function which storm sash performs in relation to the comfort and health of the occupants of a house. With the government and nutrition experts working to make Americans strong for the gigantic task of advancing democracy, it is important that living quarters be weather-tight so that temperatures during the winter months can be more constant and better regulated.

## FUEL SAVINGS AND COMPARATIVE HEATING COSTS

*Four types of houses with and without window conditioning and attic insulation*

|  ZONE 9<br>ZONE 8<br>ZONE 7<br>ZONE 6<br>ZONE 5<br>ZONE 4<br>ZONE 3<br>ZONE 2<br>ZONE 1<br>ZONE 0 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Attic area ventilated above insulation | 1488.5 sq. ft. | | 770 sq. ft. | | 1143 sq. ft. | | 995 sq. ft. | |
| Sidewalls net | 2447.7 sq. ft. | | 1634 sq. ft. | | 1332 sq. ft. | | 1197.5 sq. ft. | |
| Window area | 540.3 sq. ft. | | 326 sq. ft. | | 363 sq. ft. | | 285 sq. ft. | |
| Crack length | 590.4 lin. ft. | | 389 lin. ft. | | 422 lin. ft. | | 365 lin. ft. | |
| Unheated floor | None | | None | | None | | None | |
| HTG. COST—NO INSULATION—COAL $10 PER TON | $225.35 | | $136.14 | | $150.71 | | $124.14 | |
| ZONE 9 | | | | | | | | |
| Heating cost if attic is insulated | 181.80 | | 113.93 | | 117.64 | | 95.64 | |
| Heating cost with window conditioning | 172.32 | | 103.25 | | 113.93 | | 94.21 | |
| Savings due to insulation 3⅝″ minimum wool in attic floor only | 43.55 | 19.3% | 12.21 | 16.3% | 33.07 | 21.9% | 28.50 | 23.0% |
| Savings due to window conditioning only | 53.03 | 23.5% | 32.89 | 24.2% | 36.78 | 24.4% | 29.93 | 24.1% |
| Savings with both TOTAL | $ 96.58 | 42.8% | $ 45.10 | 40.5% | $ 69.85 | 46.3% | $ 58.43 | 47.1% |
| HTG. COST—NO INSULATION—COAL $10 PER TON | $175.00 | | $106.64 | | $115.00 | | $ 97.14 | |
| ZONE 7 | | | | | | | | |
| Heating cost if attic is insulated | 141.43 | | 89.21 | | 89.29 | | 74.57 | |
| Heating cost with window conditioning | 133.04 | | 80.57 | | 87.86 | | 74.14 | |
| Savings due to insulation 3⅝″ minimum wool in attic floor only | 33.57 | 19.2% | 17.43 | 16.3% | 25.71 | 22.4% | 22.57 | 23.3% |
| Savings due to window conditioning only | 41.96 | 24.0% | 26.07 | 24.4% | 27.14 | 23.6% | 23.00 | 23.7% |
| Savings with both TOTAL | $ 75.53 | 43.2% | $ 43.50 | 40.7% | $ 52.85 | 46.0% | $ 45.57 | 47.0% |
| HTG. COST—NO INSULATION—COAL $10 PER TON | $125.71 | | $ 75.96 | | $ 83.07 | | $ 68.79 | |
| ZONE 5 | | | | | | | | |
| Heating cost if attic is insulated | 101.79 | | 63.54 | | 65.14 | | 52.86 | |
| Heating cost with window conditioning | 95.89 | | 57.71 | | 63.14 | | 52.61 | |
| Savings due to insulation 3⅝″ minimum wool in attic floor only | 23.92 | 19.0% | 12.42 | 16.4% | 17.93 | 21.9% | 15.93 | 23.2% |
| Savings due to window conditioning only | 29.82 | 23.7% | 18.25 | 24.0% | 19.93 | 24.3% | 16.18 | 23.5% |
| Savings with both TOTAL | $ 53.74 | 42.7% | $ 30.67 | 40.4% | $ 37.86 | 46.2% | $ 32.11 | 46.7% |

**LIBBEY-OWENS-FORD GLASS COMPANY**

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